Summary of State Approaches to VI – 2018 Update

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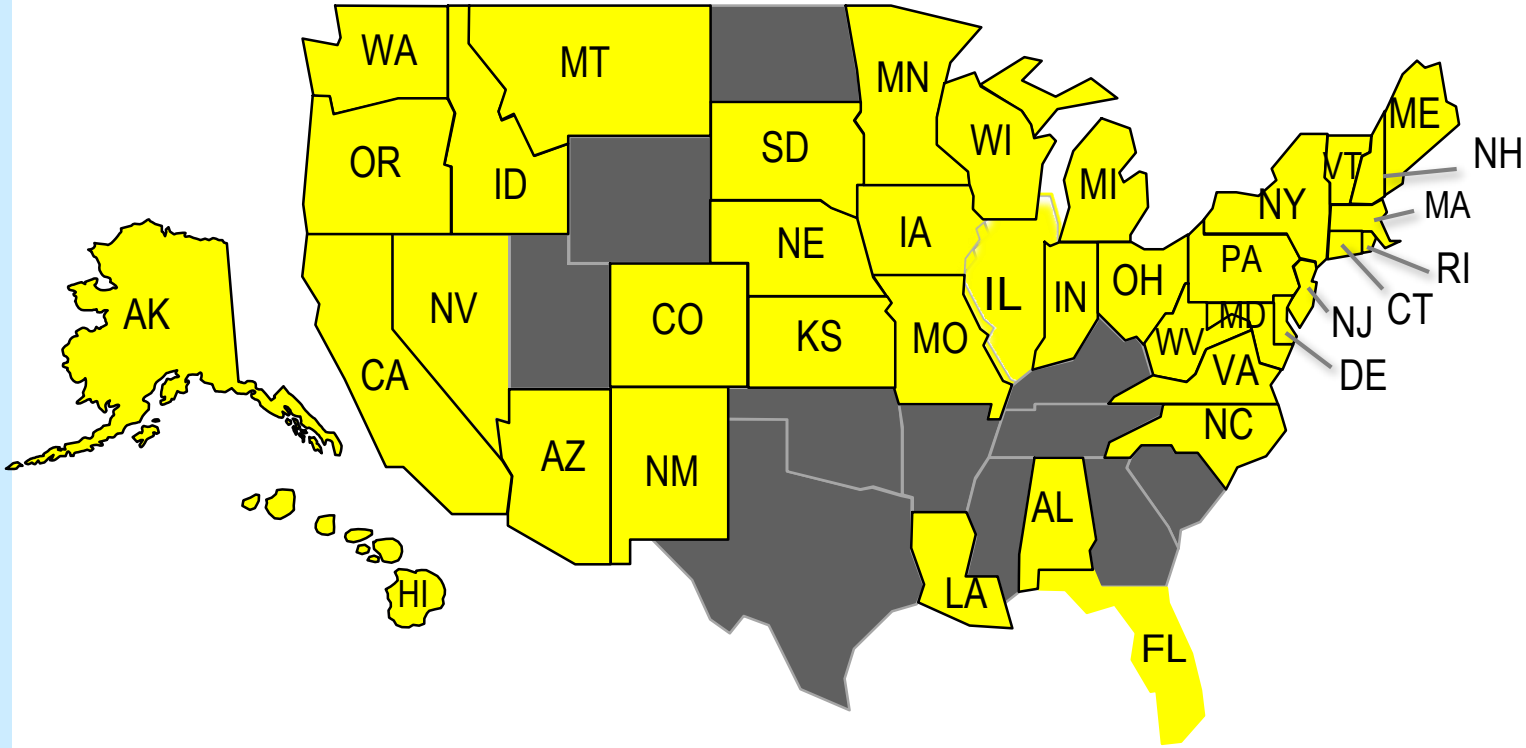
AEHS

Approach

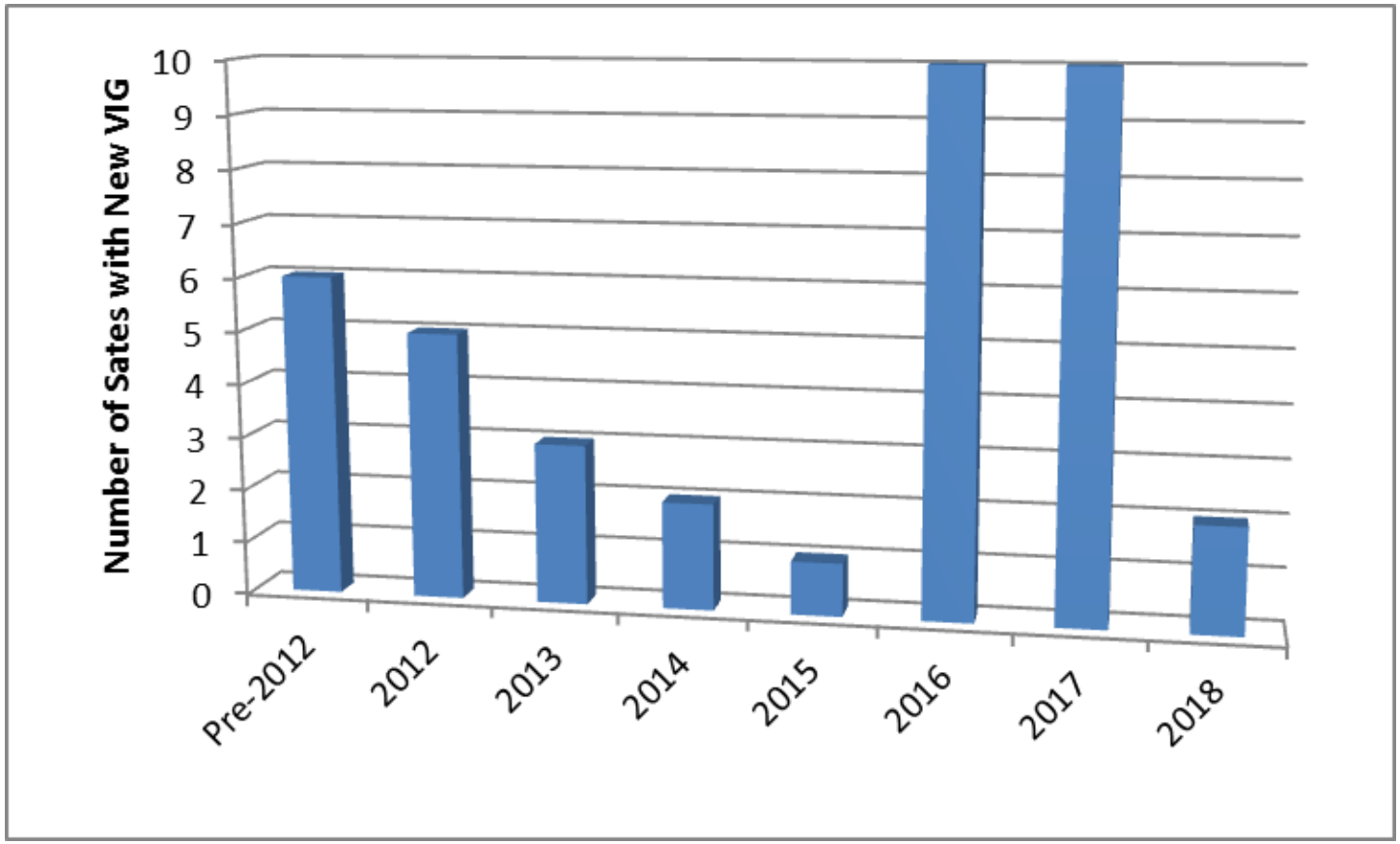
- Update of 2012 Survey
- Identified and reviewed available VI guidance documents
  - Both draft and final documents
- Looked for areas of consensus and areas of divergence among states

States With VI Guidance as of 2018



39 States have issued draft or final guidance

Year Guidance was Issued



28 new guides or updates since 2012

Challenge for State Regulators

- Review and incorporate extensive VI-related literature

- Address concerns of various stakeholders

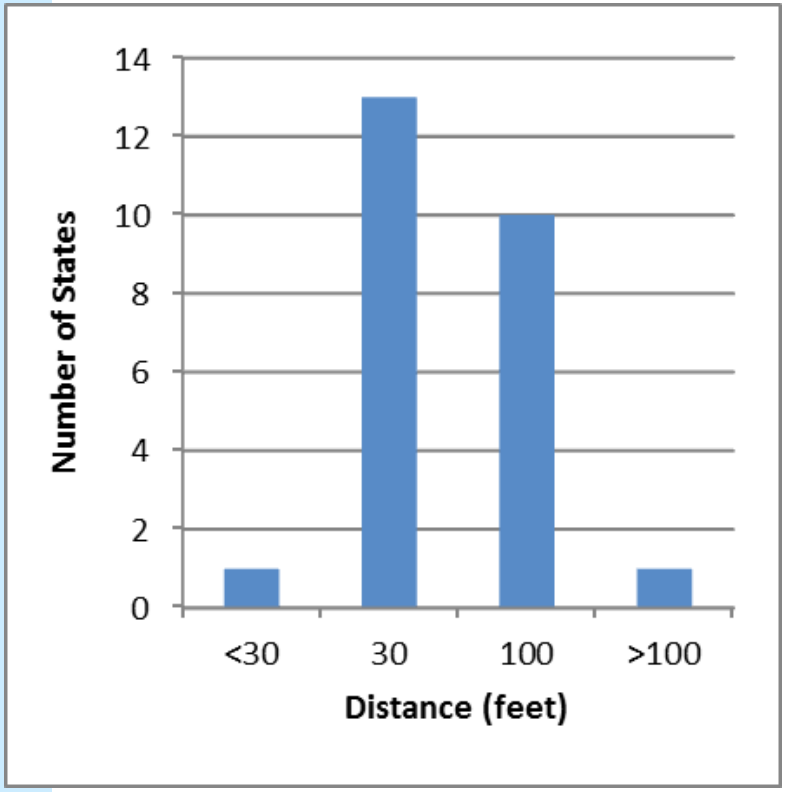
Results

Key Elements of Guidance

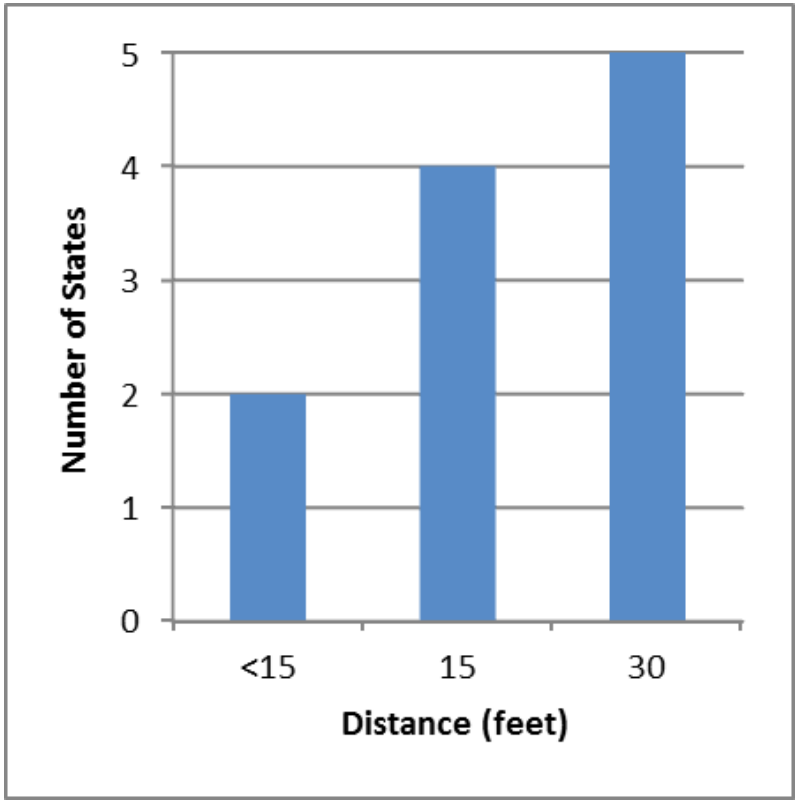
- Exclusion Distances
- Types of Screening Values
- Specific Numeric Screening Values
- Attenuation Coefficients (α values)
- Short-Term TCE concerns

Exclusion Distances Petroleum VOCs

Lateral

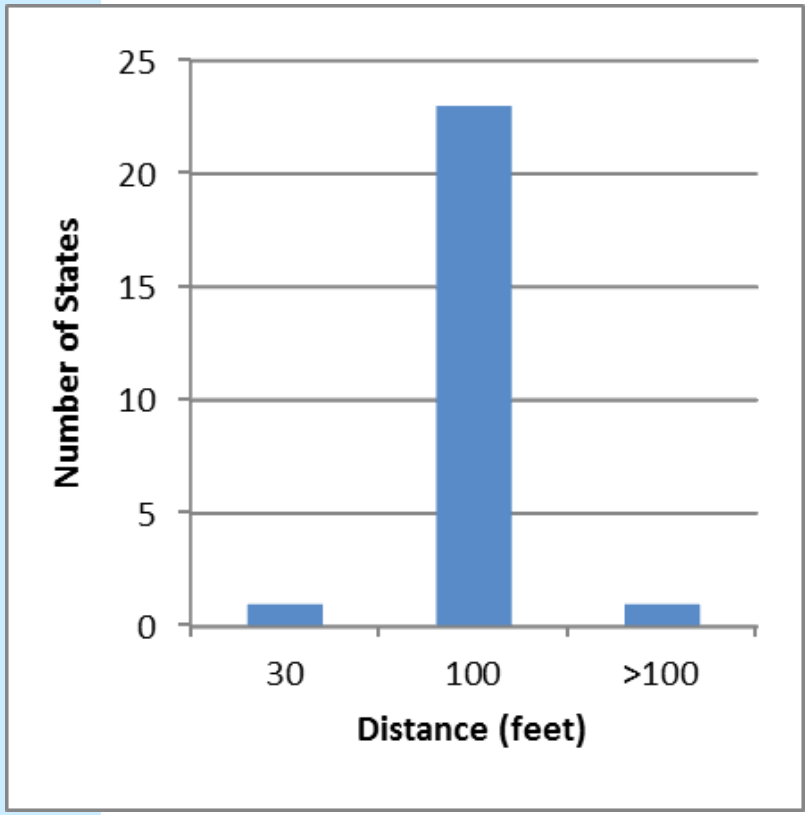


Vertical



Exclusion Distances Chlorinated VOCs

Lateral



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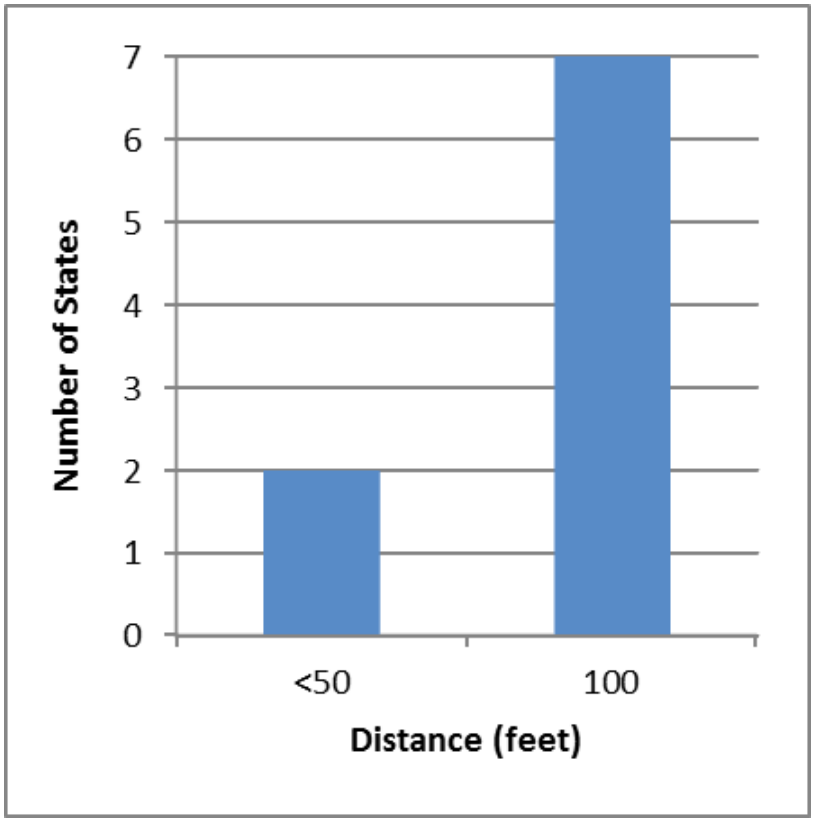
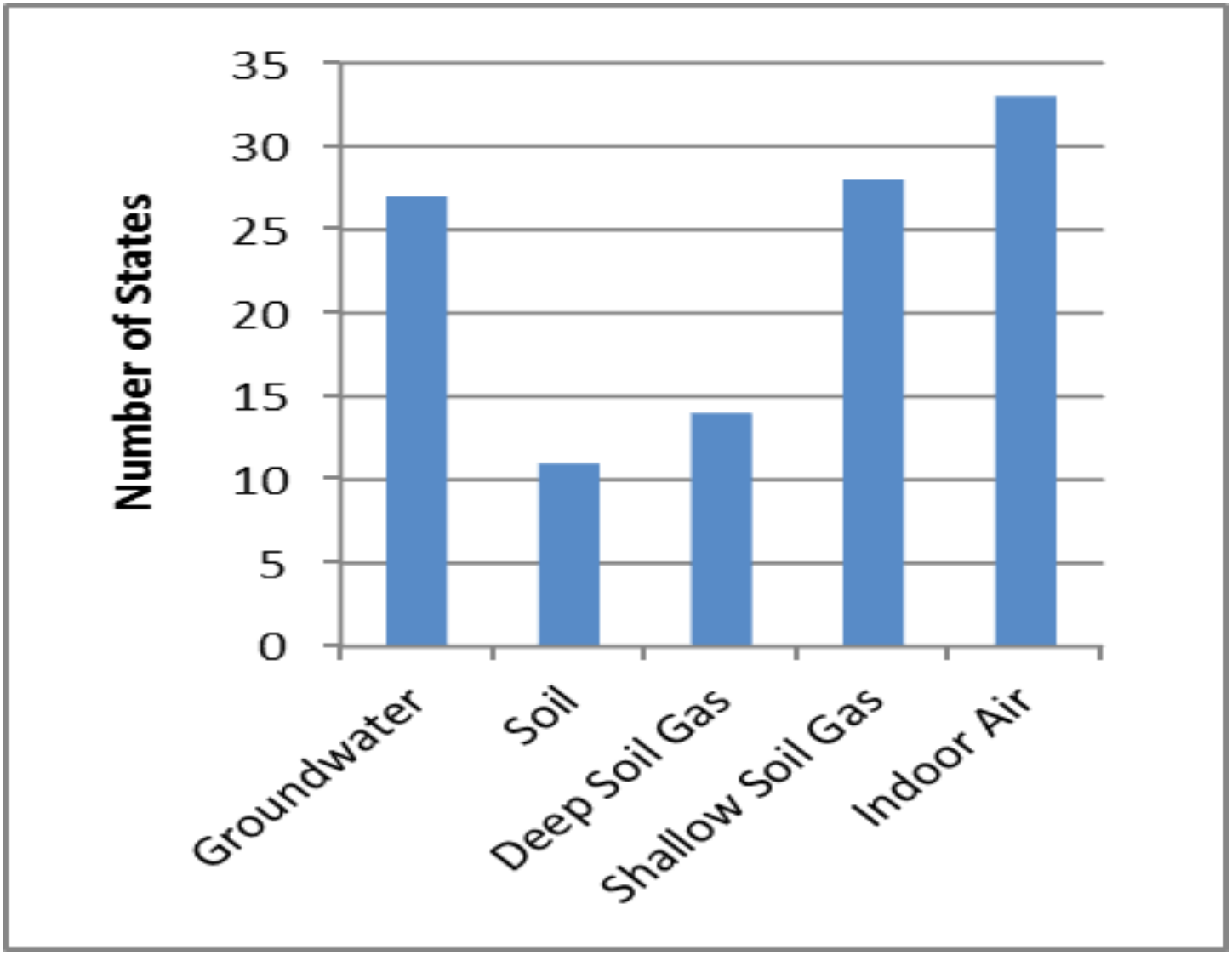


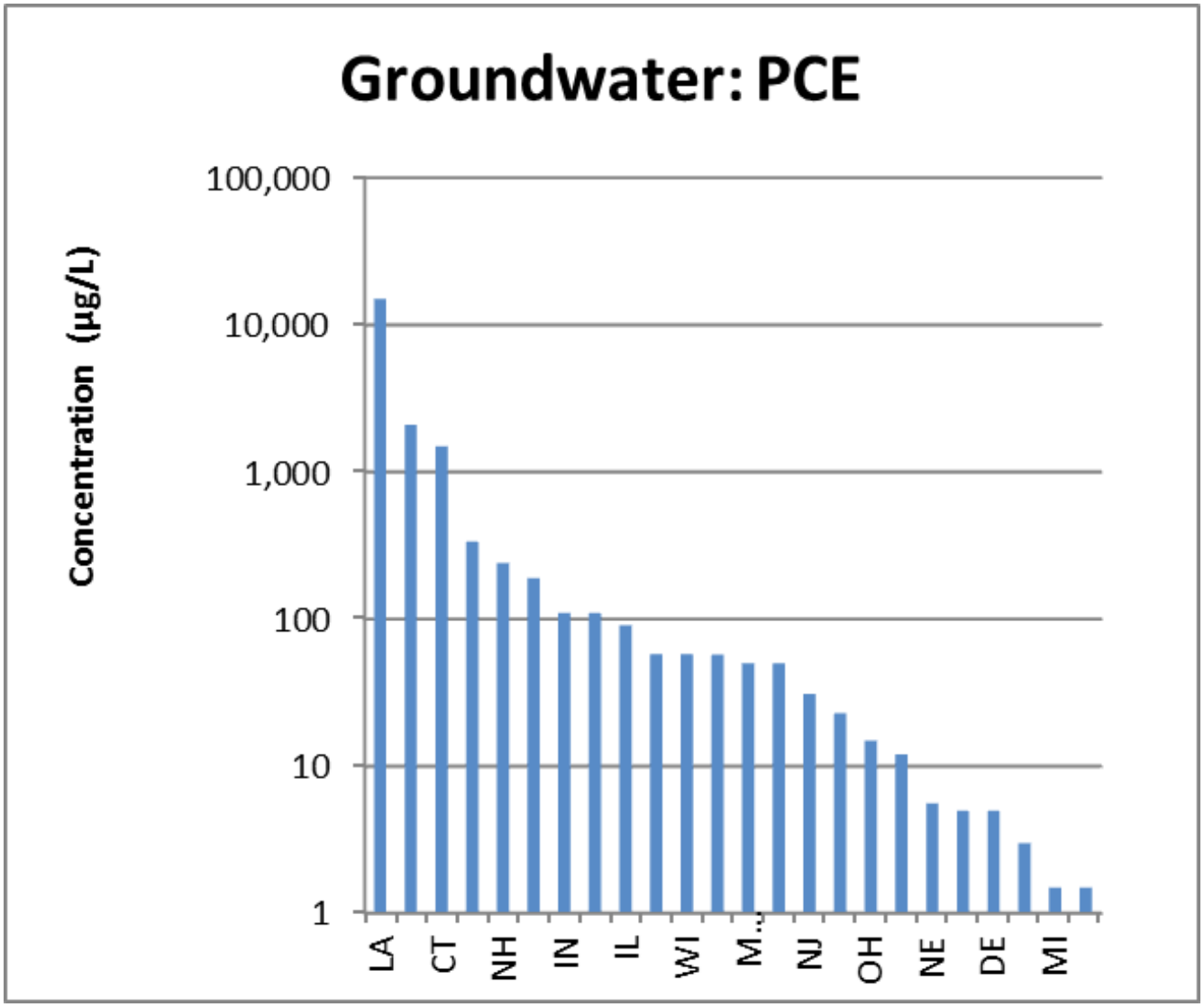
Types of Screening Levels



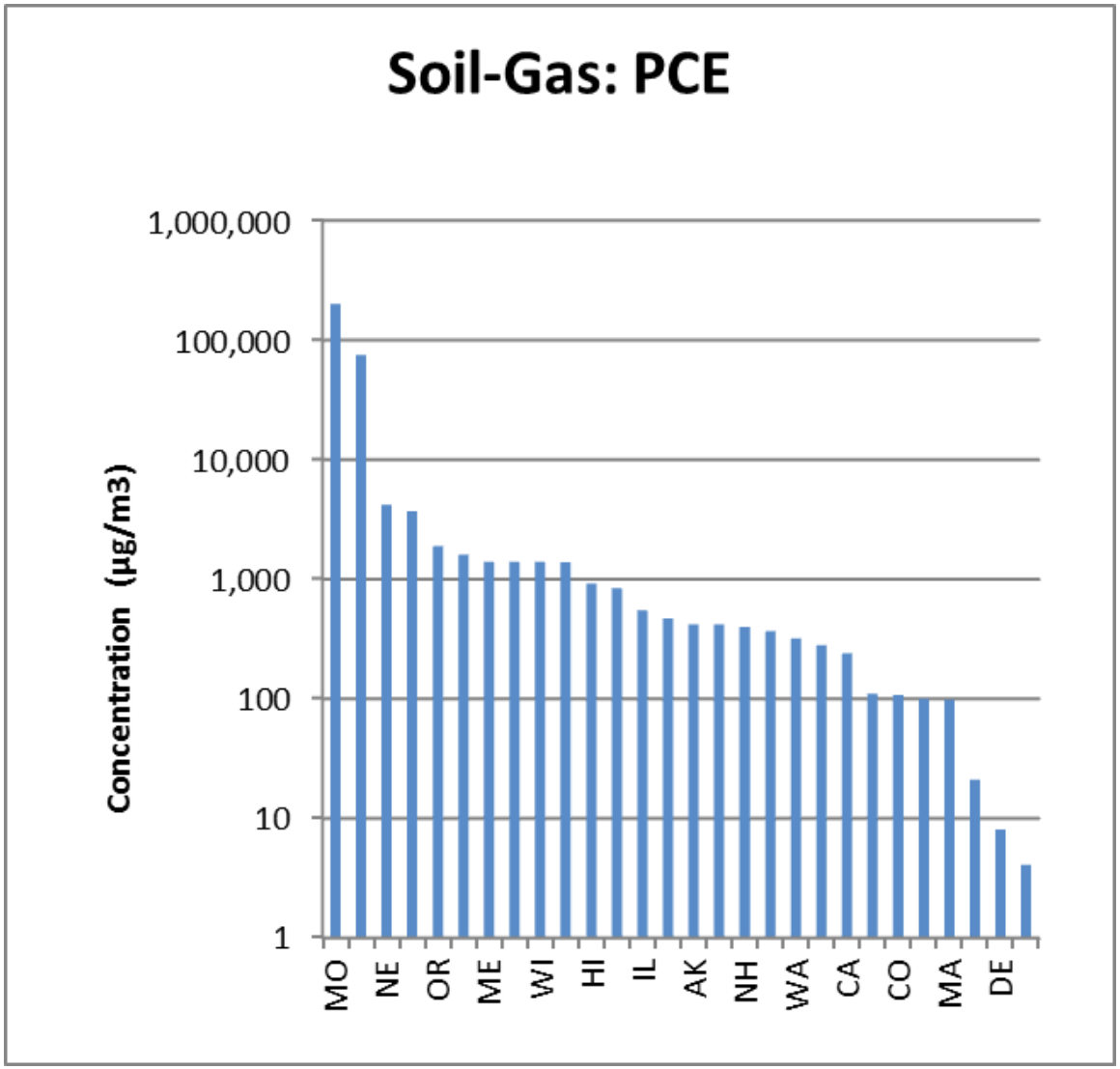
Screening Values

- Little consistency among states
- More screening levels for soil than in 2012
- More reliance on shallow soil gas data than on deeper soil gas data
- Depending on State, values for <10 to >100 individual VOCs
- 31 States have non-residential values

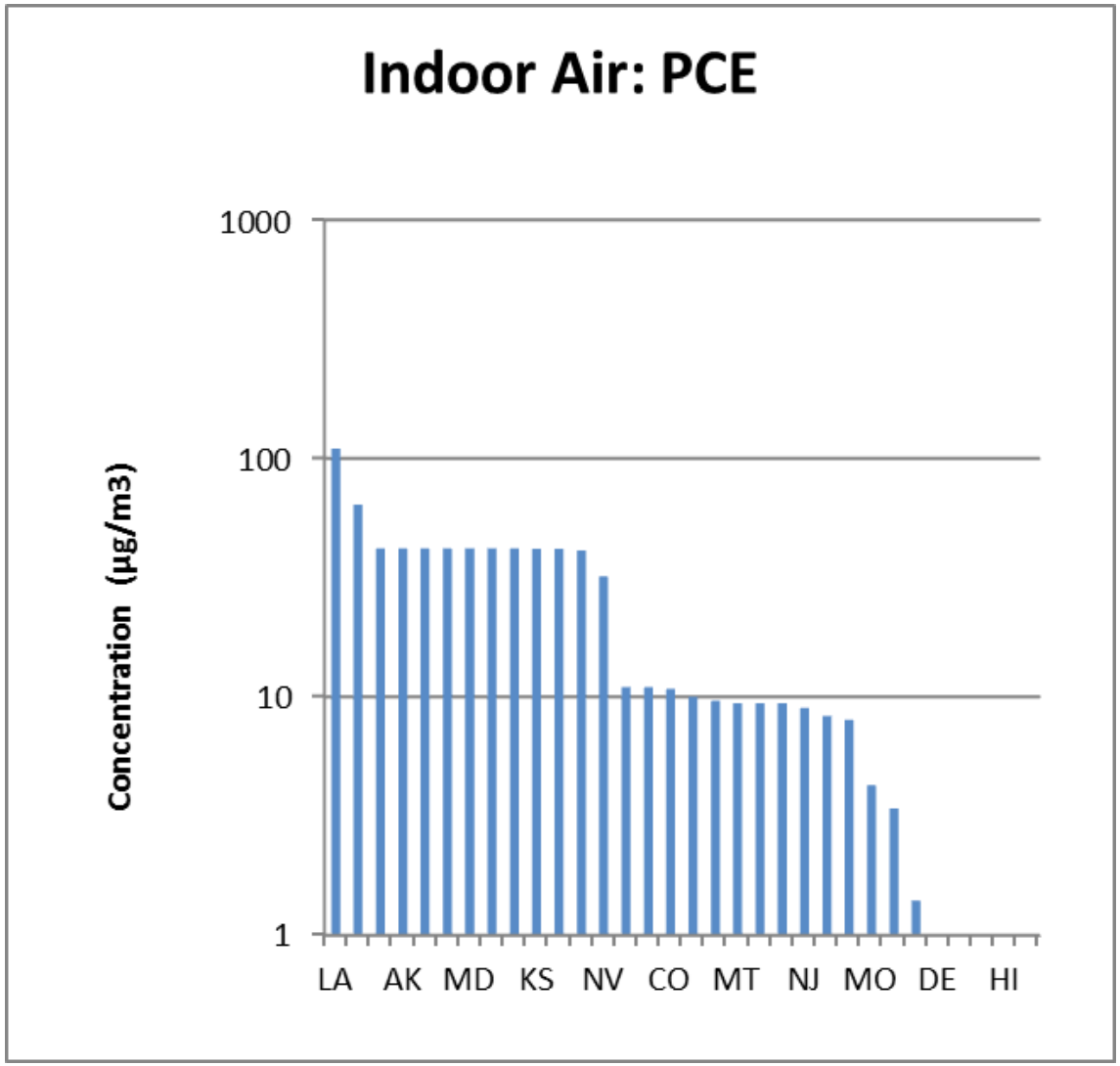
Screening Levels



Screening Levels



Screening Levels



Note:
Calif. value is
0.48 µg/m3

Selected Screening Values - PCE

Media	California	New Jersey	New Mexico	**Range of Values**
Groundwater (µg/L)	3	31	57.5	**55,000x**
Soil Gas (µg/m3)	240	470	1,390	**49,000x**
Indoor Air (µg/m3)	0.48	9	41.7	**270x**

Selected Screening Values - TCE

Media	California	New Jersey	Conn.	**Range of Values**
Groundwater (µg/L)	5.6	2	219	**137,000x**
Soil Gas (µg/m3)	240	27	38,000	**2,500,000x**
Indoor Air (µg/m3)	0.48	3	5	**2,700x**

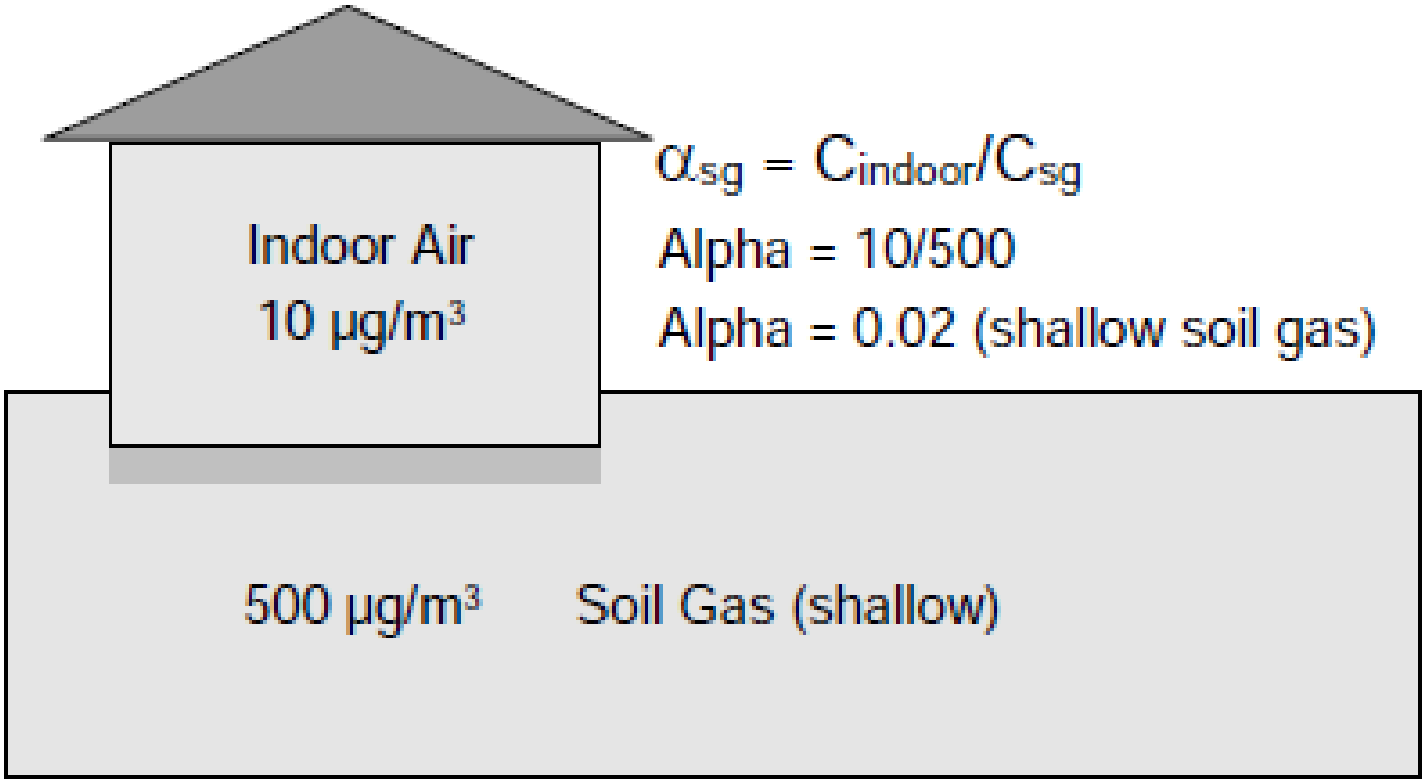
Selected Screening Values - Benzene

Media	California	New Jersey	Missouri	**Range of Values**
Groundwater (µg/L)	1.1	20	1,000	**3,100x**
Soil Gas (µg/m3)	48	16	190,000	**193,000x**
Indoor Air (µg/m3)	0.097	2	5	**400x**

Range of Values for Additional VOCs

Media	Naphthalene	Ethyl-Benzene	Ethylene Dichloride
Groundwater (µg/L)	**8,300x**	**37,000x**	**180x**
Soil Gas (µg/m3)	**43,000x**	**2,500,000x**	**4,300x**
Indoor Air (µg/m3)	**40,000x**	**10,000x**	**80x**

Attenuation Factors (α)



Attenuation Coefficients

- Groundwater values generally 0.001
- Deep soil gas generally 0.01 to 0.03
- Shallow soil gas values generally: 0.1 to 0.03
- Crawl space values are 1 in all 13 states that give values.

Short-term TCE Concerns

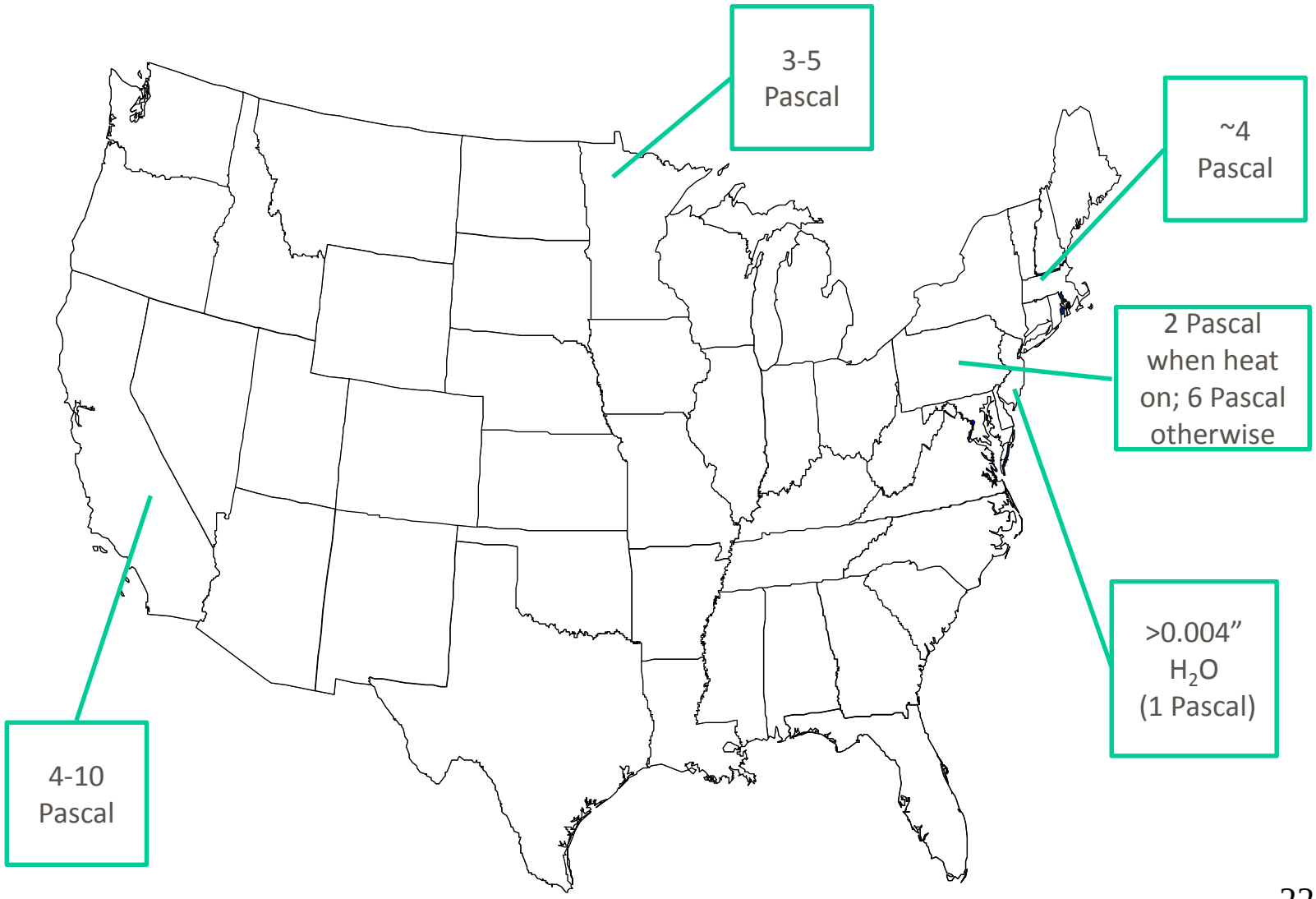
- Still controversial
- Approaches vary, e.g.,
  - CA (2014): *Residential Accelerated Response Action Level 2 µg/m³; Urgent RAL 6 µg/m³*
  - IN (2016): *"accelerated response not scientifically supportable"*
  - *MI (2018 draft) has non-residential values based on <12-hr total exposure*

Other Topics of Interest

Guidance related to:

- VI mitigation
- Experimental design (e.g., number of samples, number of rounds of samples, leak checks, QC, etc.)
- Alternatives to sampling w/canisters
- Preferential pathways

SSDS: one practice – many variations



Summary

- Most states that have VI guidance follow a tiered evaluation approach
- There are significant differences from state to state in the degree of conservativeness used (e.g., screening levels)
- We offer no opinion as to which state is “best” or “right” in terms of technical issues except to caution that, contrary to public perception, a more conservative approach is not always better

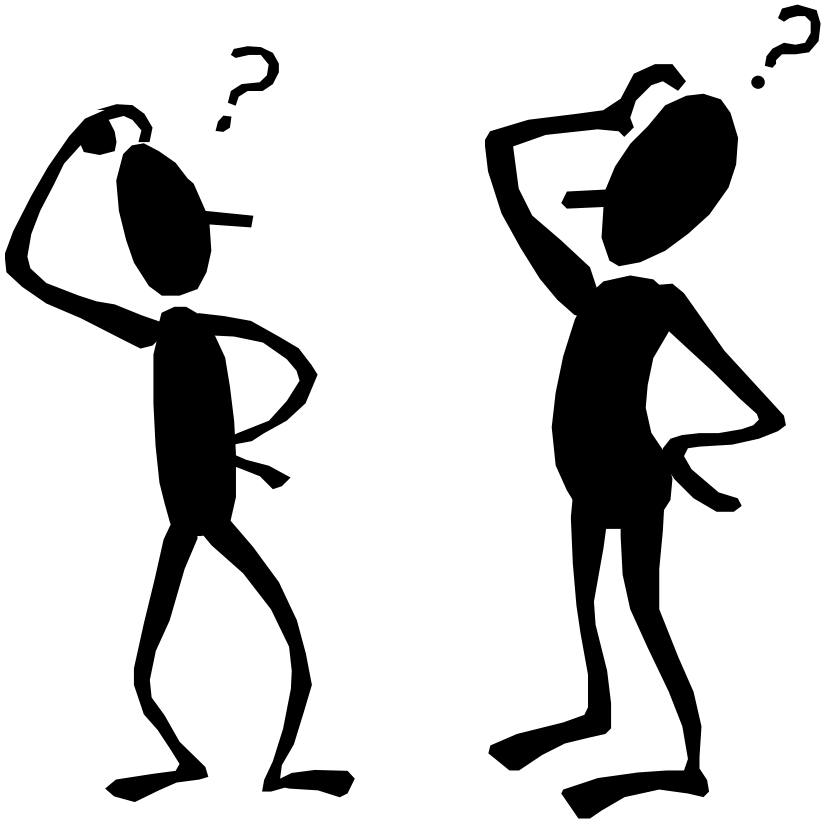
Observations

- It is hard to keep up with current VI policies: State vapor intrusion guidance continues to rapidly change. Some state policies are spread across multiple guidance documents.
- Many policies are inconsistent between states: e.g., petroleum exclusion distances, screening concentrations, sampling requirements.
- States are challenged to keep up with emerging issues:
  - New investigation approaches, new sampling and analysis methods
  - Lack of consensus about short-term exposure risk
  - Uncertainty regarding significance of preferential pathways

Observations

- Over-emphasis on screening levels: Much more guidance on appropriate screening levels to use as opposed to guidance on what to do for sites where screening levels are exceeded.
- Little guidance on mitigation: For what guidance exists, there is little consensus among states

Q&A Opportunity



Thank You!

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